REMARKS

In the present Amendment, Claims 1 and 27 have been amended to correct a clerical error, by replacing "VIIIB" with --VIII--. Applicants respectfully submit that one skilled in the art would recognize the error and the appropriate correction. This amendment is further supported by the specification, for example, at page 9, last full paragraph.

Claims 2-3, 5 and 29-30 have previously been canceled.

No new matter has been added and entry of the Amendment is respectfully requested. Upon entry of the Amendment, Claims 1, 4, 6-28, 31 and 32 will be all the claims pending in the application.

I. Response to Rejections Under 35 U.S.C. § 112

At page 2 of the Office Action, Claims 1 and 27 have been rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.

Applicants respectfully submit that the present claims are in compliance with the § 112 requirements for at least the following reasons.

The specification describes at page 9, last full paragraph, that "Examples of the metal element contained in the raw material metal oxide powder are the metal elements of the Group Ib of the Periodic Table such as copper, etc.; the metal elements of the Group II such as magnesium, zinc, etc.; the metal elements of the Group III such as yttrium, cerium, gallium, indium, uranium, etc.; the metal elements of the Group IV such as titanium, zirconium, germanium, etc.; the metal elements of the Group V such as vanadium, niobium, tantalum, bismuth, etc.; the metal elements of the Group VI such as chromium; the metal elements of the

Group VII such as manganese; and the metal elements of the Group VIII such as iron, cobalt, nickel, etc."

Applicants respectfully submit that one skilled in the art understands that Groups II, III, IV, V, VI and VII of the Periodic Table of the Elements include Groups IIA and IIB, IIIA and IIIB, IVA and IVB, VA and VB, VIA and VIB, and VIIA and VIIB, respectively. Further, Applicants respectfully submit that one skilled in the art understands that the CAS version of the Periodic Table of the Elements labels columns 1 and 2 as 'IA' and 'IIA', columns 3 through 7 as 'IIIB' through 'VIB', column 8 through 10 as 'VIII', columns 11 and 12 as 'IB' and 'IIB' and columns 13 through 18 as 'IIIA' through 'VIIIA'. See relevant portion of EnvironmentalChemistry.com, a copy of which is attached herewith. The present specification's exemplification of copper as a Group Ib element confirms that the CAS version of the Periodic Table of the Elements is used in the present application.

It is apparent that magnesium is a Group IIA element; that zinc is a Group IIB element; that yttrium, cerium and uranium are Group IIIB elements among which cerium is a lanthanide and uranium is an actinide; that gallium and indium are Group IIIA elements; that titanium and zirconium are Group IVB elements; that germanium is a Group IVA element; that vanadium, niobium and tantalum are Group VB elements; that bismuth is a Group VA element; that chromium is a Group VIB element; and that manganese is a Group VIIB element.

In view of the foregoing, Applicants respectfully submit that the recitation "Groups IIA, IIB, IIIA, IIIB, IVB, VA, VB, VIB and VIIB" is sufficiently supported by the present specification and thus is not new matter. Further, as described above, Applicants have amended

the claims to replace "VIIIB" with --VIII--. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

II. Response to Claim Objection

At page 3 of the Office Action, Claims 8 and 10 have been objected to under 37 CFR § 1.75(c), as allegedly failing to further limit the subject matter of a previous claim.

Applicants respectfully traverse the rejection. Specifically, cerium is one of the lanthanoids and uranium is one of the actinoids. Lanthanoids and actinoids may be regarded as the Group III elements. In this regard, the specification expressly describes at page 9, last full paragraph, "the metal elements of the Group III such as yttrium, cerium, gallium, indium, uranium, etc." That is, Group III used in the present application includes Lanthanoids and actinoids. As noted above, Group III used in the present application corresponds to Group IIIB of the CAS version of the Periodic Table of the Elements. Present Claim 1 (as well as Claim 4), from which Claims 8 and 10 depend, recites Group IIIB. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the objection.

III. Response to Rejections Under 35 U.S.C. § 103(a)

a. At page 4 of the Office Action, Claims 1, 4, 6, 11-13, 20, 23, 24 and 26-28 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Jodden '163.

Applicants again respectfully submit that the present claims are patentable over Jodden '163.

As discussed in the Amendment filed September 1, 2004, Jodden '163 discloses a process for making titanium dioxide concentrates. However, the titanium dioxide particles prepared by

the process of Jodden '163 are not polyhedral particles having a number average particle size of 0.1 to 40 μm, as recited in present Claim 1.

The experimental data in Mr. Umeda's Declaration under 37 C.F.R. § 1.132 (original Declaration was previously submitted August 2, 2004, and a copy resubmitted September 1, 2004), confirms that the titanium oxide of Jodden '163 is different from the metal oxide in the present invention.

Specifically, in Experiment 1 of the Declaration, a titanium oxide concentrate was prepared by using the method described in Example 3 of Jodden '163. The SEM photographs and the XRD patterns of the raw material and the obtained powder were obtained (Figures 1-4). As shown in Fig, 3, the titanium oxide thus obtained did not contain polyhedral particles with at least 6 planes each, and a number average particles size of 0.1 to 40 μm. Similarly, in Experiment 2, the titanium oxide obtained did not contain polyhedral particles with at least 6 planes each.

In conclusion, Mr. Umeda states that the titanium oxide obtained by the process of Jodden '163 is different from the metal oxide as claimed in the present invention.

The Examiner noted that Figures 1-4 and 5-8 referred to in Mr. Umeda's Declaration were not attached to the Declaration (page 6 of the Office Action). Applicants note that the figures were inadvertently omitted with the submission. Accordingly, Applicants attach herewith another copy of the Declaration along with the figures.

In view of the above, Applicants respectfully submit that the present invention is not obvious over Jodden '163 and that the rejection should be withdrawn.

b. At page 4 of the Office Action, Claims 1, 4, 6-8, 11-13, 20, 23, 24, 26-28 and 31 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Pastor '656.

Applicants also again respectfully submit that the present claims are patentable over Pastor '656.

Applicants emphasize that Pastor '656 discloses a process for the preparation of a water-free oxide of silicon or germanium, both of which are Group IVA elements, which are excluded in present Claim 1, comprising the steps of:

(a) reacting a nonpolar chloride compound containing said silicon or germanium with dimethylsulfoxide to form a precipitate containing said oxide, in a nonaqueous aprotic liquid solvent...;

(b) separating said precipitate formed in step "a" from said solvent under water-free conditions; and

(c) exposing said precipitate to a gas phase reactive atmosphere comprising atomic halogen....

In the process of Pastor, water in the oxide of silicon or germanium is reacted with atomic halogen to be removed from the oxide. Thereby, the water-free oxide is obtained. The resulting water-free metal oxide is used as an optical material since it transmits radiation in the near infrared wavelength region (see column 1, lines 10-16).

Furthermore, as discussed in the Amendment filed September 1, 2004, Pastor discloses only a process for removing water from the oxide to make the water-free oxide, but does not disclose or suggest any process for producing a metal oxide of a metal element selected from the group consisting of the metal elements of the Groups IB, IIA, IIB, IIIA, IIIB, IVA, IVB, VA,

VB, VIB, VIIB and VIII of the Periodic Table (relevant to present Claims 13, 20, 23, 24, 26-28 and 31), or a metal oxide of a metal element selected from the group consisting of the metal elements of the Groups IB, IIA, IIB, IIIA, IIIB, IVB, VA, VB, VIB, VIIB and VIII of the Periodic Table and having the controlled particle shape and specific number average particle size (relevant to present Claims 1, 4-8, 11 and 12).

In view of the foregoing reasons, Applicants respectfully submit that the present invention is not obvious over Pastor and that the rejection should be withdrawn.

c. At page 5 of the Office Action, Claims 1, 4, 6-10, 13, 15, 16, 18-20, 22-24, 26-28, 31 and 32 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brackelsberg '258.

Applicants also again respectfully submit that the present claims are patentable over Brackelsberg for at least the following reasons.

Applicants emphasize that Brackelsberg discloses a process of manufacturing pure iron or manganese metal from pure or impure iron or manganese-metal oxides. In the process of Brackelsberg, pure iron or pure manganese, that is, a metal is obtained from a metal oxide.

In contrast, the present invention provides a metal oxide, and not a pure metal.

In view of the above, Applicants respectfully submit that the present invention is not obvious over Brackelsberg and that the rejection should be withdrawn.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: March 21, 2005

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Chemistry & Environmental Dictionary

Gamma Ray - Group

Gamma Ray: extremely short wavelength and intensely high-energy electromagnetic radiation. Gamma rays originate from an atom's nucleus and normally accompany alpha and beta particles as part of the emissions of the radioactive decay of an atom and always accompany nuclear fission. Because gamma rays are energy and not matter, they are very penetrating and can cause damage to animal and plant tissues. Gamma rays are absorbed by extremely dense materials like lead (Pb) and depleted uranium (U).

Gas: a substance of very low density that has no definite shape or volume.

Group: the vertical columns (major classes or divisions) into which elements are arranged in the periodic table of elements. There are three common numbering systems for these groups:

The new IUPAC system, which numbers each column with Arabic numbers from 1 (one) through 18 (eighteen). To reduce confusion caused by the other two systems, this is the system that is used in articles on this web site.

The old IUPAC system, which labeled columns with Roman numerals followed by either the letter 'A' or 'B'. Columns were numbed such that columns one through seven were numbered 'IA' through 'VIIA', columns 8 through 10 were labeled 'VIIIA', columns 11 through 17 were numbered 'IB' through 'VIIB' and column 18 was numbered 'VIII'.

The CAS system, which also used Roman numerals followed by an 'A' or 'B'. This method, however, labeled columns 1 and 2 as 'IA' and 'IIA', columns 3 through 7 as 'IIIB' through 'VIB', column 8 through 10 as 'VIII', columns 11 and 12 as 'IB' and 'IIB' and columns 13 through 18 as 'IIIA' through 'VIIIA'.

Because of the confusion the old IUPAC and the CAS system created, the IUPAC adopted their new system.

Elements are arranged in these groups according to whose proprieties are similar. All elements in Group 1 for instance are alkali metals. They have only one electron in the outer shell (valence electron) and as a result are highly reactive. Elements in Group 17 are the halogens. They all have seven electrons in the outer orbital (two in level *s* and five in level *p).* They are also very reactive because they have seven electrons in the outer shell and will readily accept an electron in order to reach the ion configuration with the ideal number of eight electrons in the outer shell. Elements Group 18 have a complete outer shell with eight electrons. These noble gases are highly stable and do not react to form compounds under normal conditions.

◀ Fahrenheit - Freezing Point
| Dictionary Index |
Half-life - Hyaluronic acid ▶

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Periodic Table of Elements

This periodic table of elements provides comprehensive data on the chemical elements including scores of properties, element names in many languages and most known nuclides (Isotopes). Below the table there is a "**Chemical Elements Sorted By**" section with links that will sort chemical elements by various properties.

Newest Articles

- **Pseudoscience: A Threat to Our Environment (Oct 2004)**
  US Government scientists have always been free to conduct unbiased research for the betterment of society and the environment. Under pressure from industry and special interests, biased research has resulted in pseudoscience that threatens the integrity of science in America.
- **Asbestos a three part series (summer 2004):**
  - **Part One: A Brief History of Asbestos Use and Associated Health Risks**
  - **Part Two: Chemical & Physical Properties of Asbestos**
  - **Part Three: Asbestos: A Manufacturing Health Hazard Dating to Prehistoric Times**

Please bookmark us and tell your friends.

Please bookmark or link to this periodic table of elements as you will want to be back! If this site was useful to you, please tell your friends, teachers and/or coworkers about our website.

Periodic Table of Elements

Periods	Groups 1 IA IA	2 IIA IIA	3 IIIA IIIB	4 IVA IVB	5 VA VB	6 VIA VIB	7 VIIA VIIB	8 VIIIA VIII	9 VIIIA VIII	10 VIIIA VIII	11 IB IB	12 IIB IIB	13 IIIB IIIA	14 IVB IVA	15 VB VA	16 VIB VIA	17 VIIB VIIA	18 VIII VIIIA
1	1 H																	2 He
2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	57 La	1 72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	89 Ac	2 104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Uun	111 Uuu	112 Uub		114 Uuq		116 Uuh		118 Uuo

6	1 58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
7	2 90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

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